CUBIT Capability Proposal

Technical Area	Technical Lead
Geometry, Meshing, Infrastructure, GUI, Graphics, etc..	Cubit Developer in charge of technical area
Infrastructure	Ray

MRD Description
Describe the capability in terms of how a user would see it.

Removes the extra mesh entities and ids from the user's knowledge. Example: when a user meshes volume with hexes, he does not expect to get a bunch of quads and edges also. As much as possible, the user need only know about mesh entities which are going to be output. Others should be hidden for simplicity. Would also make it simple to match the ids to the exodus output and to output/recover ids when exporting/importing meshes.

SRS Description
What needs to be done by Cubit developers to implement this capability? Break the tasks into steps if applicable. (Steps should be on the order of 2 man-weeks or more)

1. Put all elements in a single id space
2. Remove construction entities from the main id space into some other space used by the system but not the user. Add a system for the user to explicitly create surface or construction entities when desired.
3. Modify commands as much as possible to use only nodes and elements, rather than lower order entities.
4. Output valid exodus element map
5. Output actual ids for mesh output formats which support explicit ids.

Justification
Describe why this is important and what impact it will have if it is implemented. (or not implemented).

Usuability, especially for users from other meshing packages. Users are always surprised with CUBIT when they ask to mesh a 10x10x10 brick and instead of getting just 1000 hexes, they get a bunch of edges and quads also. This will become a very common complaint if we go to a single id space for elements so that we can output ids correctly for mesh export

Resources	Time estimate	Targeted Release
Who will work on this	How much time will it take in man-weeks	10.2 (August 06), 10.3 (March 2007), 10.4 (August 2007), Future (beyond FY07)
1. Ray (id space)	3	
2. Ray (construction space)	10	
3. Randy, Ray (commands)	6	
4. Clint (mesh output)	2	
5. Clint (mesh output)	6	

Submitted By:	Date:
Ray	27 March, 2006